

**IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF ILLINOIS  
EASTERN DIVISION**

<b>UNITED STATES OF AMERICA,</b>	)	
	)	
<b>Plaintiff,</b>	)	
<b>v.</b>	)	<b>No. 20 CR 369</b>
	)	
<b>MARTIN CROSSLEY,</b>	)	<b>Hon. Martha M. Pacold</b>
	)	
<b>Defendant.</b>	)	

**DEFENDANT’S MOTION IN LIMINE TO BAR EXPERT TESTIMONY**

NOW COMES defendant, MARTIN CROSSLEY, by and through his attorney, QUINN A. MICHAELIS, and moves this Honorable Court to bar the proposed government testimony of Special Agent Jeremy Bauer, or in the alternative, to grant a hearing pursuant to *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579 (1993). In support of this motion, Mr. CROSSLEY states as follows:

**1. INTRODUCTION**

On May 6, 2021, the government provided Mr. CROSSLEY with a brief summary of their proposed expert testimony. In short, the government intends to elicit expert testimony from Federal Bureau of Investigation Special Agent Jeremy Bauer regarding the general location of a cell phone subscribed to by Mr. Crossley (“the cell phone”). Specifically, the government intends to have Agent Bauer testify as to the location of specific cell phone towers that were activated by the cell phone near the location of the Glen Ellyn Bank and Trust on and around the date and time of the bank robbery. As part of his proposed testimony, Agent Bauer has created a draft report of his analysis of cell phone records that will also be the basis of his testimony. That report (“the CAST report”) indicates that the analysis Agent Bauer conducted was based on a review of cell phone records and “Timing Advance data which shows an approximate distance

from the tower for the cell phone, as measured by the network.”

Using this methodology, the CAST report includes a series of maps showing the locations of certain cell towers that were activated by the cell phone in relation to the bank and Mr. Crossley’s mother’s home. A final map included in the CAST report depicts the “measured distance” from the cell phone tower presumably to the cell phone itself, placing the cell phone within a more specific geographical location.

Special Agent Jeremy Bauer should be precluded from proffering opinions about the location of the cell phone. Even if Agent Bauer is qualified as an expert, his conclusions about the location of Mr. Crossley’s cell phone is not based on reliable principles and methods as required by Federal Rules of Evidence 702 and 703. Further, his testimony would confuse and mislead the jury and should be excluded under Federal Rule of Evidence 403.

## **2. THE LAW**

The government’s apparent theory is that Mr. Crossley’s cell phone was within the area of the Glen Ellyn Bank on July 11, 2020, when it was robbed by a lone bank robber. To demonstrate the phone’s location, Agent Bauer will opine that Mr. Crossley’s cell phone sent a signal to the cell phone tower closest to the Glen Ellyn Bank and Trust and that the phone itself was located at or near Mr. Crossley’s mother’s house during the bank robbery. It appears from the submitted draft maps contained in the Cast report that he will also opine about the coverage area of specific towers operated by T-Mobile. Agent Bauer does not provide any further information about the “timing advance data” on which he bases his opinion, and simply states that this data is provided by T-Mobile, and that certain “measurements” were made.

Rule 702 of the Federal Rules of Evidence provides for the admission of expert testimony “if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of

reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.” F.R.E. 702 incorporates the family of cases relying on *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), and *Kumho Tire Co. v. Carmichael*, 119 S.Ct. 1167 (1999). The burden of proving the admissibility of the expert testimony rests with the proponent of the expert testimony. *Daubert*, 509 U.S. at 592 n. 10.

*Daubert* set forth a non-exclusive list of factors for trial courts to consider in assessing the reliability of scientific expert testimony:

(1) Whether the expert’s technique or theory can be or has been tested—that is, whether the expert’s theory can be challenged in some objective sense, or whether it is instead simply a subjective, conclusory approach that cannot be reasonably assessed for reliability; (2) whether the technique or theory has been subject to peer review and publication; (3) the known or potential rate of error of the technique or theory when applied; (4) the existence and maintenance of standards and controls; and (5) whether the technique or theory has been generally accepted in the scientific community.

F.R.E. 702 Advisory Committee Notes.

Similarly, the 7th Circuit has propounded the following list of factors to consider when evaluating the reliability of the underlying scientific methodology: (1) the theory can be and has been tested, (2) whether the theory has been subjected to peer review and publication, (3) the known or potential rate of error, and (4) the general acceptance of the theory in the scientific community. *Bradley v. Brown*, 42 F.3d 434, 437 (7th Cir. 2000).

Finally, the Court can exclude otherwise relevant evidence if “if the probative value is substantially outweighed by a danger of one or more of the following: unfair prejudice, confusing the issues, [or] misleading the jury.” F.R. Evid. 403.

### **3. ARGUMENT**

#### **a. Agent Bauer’s testimony should be excluded under Rule 702 because the underlying data supporting his analysis is of unknown reliability.**

To start, Agent Bauer’s testimony will be based in part on the analysis of historical cell

site location records obtained from T-Mobile for a phone subscribed to by Martin Crossley. These are regularly maintained business records<sup>1</sup> that are kept for the purpose of tracking “customer billing, carrier rates, for network monitoring, and for facility capacity planning.”<sup>2</sup> These records are not maintained for the purpose of location monitoring in the way that Agent Bauer has used them.

There are three common ways for cell phones to determine location: Global Positioning System (GPS) technology, triangulation, and historical cell site location analysis. Both GPS and triangulation are considered accurate methods of determining a cell phone’s location, however both methods require gathering information in real time.<sup>3</sup> The FCC requires that cell phone carriers maintain confidence and uncertainty data for both GPS and triangulation location monitoring, but does not require carriers to maintain this data with respect to historical cell site location data.<sup>4</sup> As such, the error rates or accuracy of the historical cell site locations data on which Agent Bauer will base his testimony is unknown. In other words, the accuracy with which T-Mobile’s cellular system records which towers are being accessed by any given cell phone is unknown. Agent Bauer’s testimony is based on the assumption that T-Mobile’s records are accurate 100% of the time, but there is no known validation testing to support this assumption.

Further, Agent Bauer’s opinion is based on an analysis of the call detail records for the cell phone provided by T-Mobile *combined with* additional records from T-Mobile containing a list of the company’s cell tower identification numbers, the location of their current towers,

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<sup>1</sup> Mr. Crossley recognizes that these records are admissible under F.R.Evid 803(6), and proposes that if they are admitted, that they be admitted with a limiting instruction to the jury that the data is admissible only for the limited purpose of suggesting that a cell phone connected to a cell tower at a specific time.

<sup>2</sup> Monique C.M. Leahy, *Telecommunications and Other Litigation: Call Detail Records and Fraud*, in 97 AM. JUR. TRIALS 1 § 1 note 48 (2020)

<sup>3</sup> Thomas J. Kirkham, *Rejecting Historical Cell Site Location Information as Unreliable Under Daubert and Rule 702*, 50 U. TOL. L. REV. 361, 373 note 19 (2019).

<sup>4</sup> John B. Minor, *Forensic Cell Site Analysis: A Validation and Error Mitigation Methodology*, 12 J. DIGIT. FORENSICS, SECURITY & L, 34-35 (2017).

coverage areas and configurations of each of those towers, and maintenance records for the towers and other equipment (cellular network records). Without this supplemental information, Agent Bauer cannot render an opinion about the location of the cell phone.

Cellular network records are maintained by the carrier for their own internal network monitoring and planning and also have no known error rates or validation methodologies for the accuracy of these records.<sup>5</sup> Importantly, T-Mobile provided a one- page letter along with the records provided in response to the government’s search warrant for the historical call detail records that stated “T-Mobile **does not conduct systematic testing of TrueCall data to ascertain the reliability or consistency of the location data it collects.**” The potential inaccuracy of these records is unknown and specifically noted by T-Mobile when disclosing records in response to search warrants.

Finally, cell phones do not connect to the closest tower, but to the tower with the strongest signal.<sup>6</sup> There are many factors that affect the signal strength of cell towers, which, in turn affect the accuracy of using tower location to determine cell phone location. The underlying assumption of this forensic analysis, however incorrect, is that the cell phone connects to the physically closest tower, not the tower with the strongest signal.

Using historical call detail records, which do not require real-time data collection, combined with cellular network records of unknown reliability, to determine a defendant’s location at the time a crime occurred is the “least accurate method of tracking a cell phone.”<sup>7</sup> Inaccurate records compromise the reliability of the analysis performed by Agent Bauer and his testimony should therefore be excluded.

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<sup>5</sup> Minor, at 35.

<sup>6</sup> Larry E. Daniel & Lars E. Daniel, DIGITAL FORENSICS FOR LEGAL PROFESSIONALS: UNDERSTANDING DIGITAL EVIDENCE FROM THE WARRANT TO THE COURTROOM. 229-30 (Robert Maxwell & Sue Spielman eds., 2012).

<sup>7</sup> Kirkham, at 361-362.

**b. Agent Bauer's testimony should be excluded under Rule 702 because the underlying methodology of his analysis is unreliable.**

Agent Bauer has provided no information regarding the underlying methodology of his proposed testimony, other than stating:

an analysis was performed on the call detail records obtained for the cell phone. The call detail records documented the network interaction to and from the cell phone. Additionally, the records documented the cell tower and cell sector ("cell site") which served the cell phone during this activity. Used in conjunction, the call detail records and a list of cell site locations illustrate an approximate location of the cell phone when contact was initiated with the network....Cell sites in existence during the time of incident were input into mapping software using latitude/longitude coordinates of the cell site provided by the service provider. The sites associated with the target cell phone were located utilizing mapping software and the plotted cell site data. T-Mobile also provided Timing Advance data which shows an approximate distance from the tower for the cell phone, as measured by the network.

Neither the government nor Agent Bauer has provided further information about the mapping software used to analyze the call detail records, or the method of analysis of this software itself. While Agent Bauer's summary of his analysis above generally lays out the steps involved in analyzing historical cell phone records, the analysis involves mapping out coverage areas of specific cell towers combined with information about the specific tower's configuration and signal to provide an estimate of where the particular cell phone is located. Presumably this is all done with the above mentioned "mapping software." "The approximate location of the cell phone when contact was initiated with the tower" is based on *estimates* of tower coverage areas. The expert disclosure provides no information about the validation of those estimates or the software used, whether those estimates or the software used has been reviewed by other organizations outside of the FBI, the potential error rates of those estimates or the software used, and the use of CAST report maps by members of the scientific community, or anyone outside of

the FBI.

One study on the accuracy of forensic cell site analysis found that as many as 40% of mapping analyses performed by law enforcement using commercially available mapping software could have underlying errors.<sup>8</sup> Without knowing more specifics about Agent Bauer's analysis and the methodology he used to render his opinion, or the accuracy of the methodology, the testimony must be excluded.

Further, it is unclear from the expert disclosure whether Agent Bauer has analyzed the call detail records himself, or whether the mapping software analyzed the call detail records and Agent Bauer is merely a conduit for relaying the data to the jury. It is therefore unclear from the expert disclosure whether Agent Bauer does, in fact, understand the underlying methodology of analyzing the call detail records, or the interpretation of those records to arrive at an approximate location for a cell phone sufficient to render an expert opinion in this case.

**c. Agent Bauer's testimony should be excluded under Rule 403 because it will mislead the jury.**

The Court may exclude otherwise relevant evidence if its probative value is substantially outweighed by a danger of unfair prejudice, confusion of the issues, or misleads the jury. F.R. Evid. 403. Agent Bauer's testimony about the cell phone's location and the CAST report generated to assist his testimony are misleading, and will leave the jury with the impression that that the analysis with respect to the location of Mr. Crossley's phone is more precise than it actually is. Unlike lay testimony, expert testimony carries an additional risk of carrying more weight with the jury, can be misleading, and difficult for the jury to evaluate. *Daubert*, 509 U.S. at 595 (1993).

Using historical call detail records, which do not require real-time data collection, to

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<sup>8</sup> Minor, at 47.

determine a defendant's location at the time a crime occurred is the "least accurate method of tracking a cell phone."<sup>9</sup> The draft CAST report created by Agent Bauer indicates that his proposed testimony will include opinion evidence that the cell phone traveled southbound from Wisconsin towards Illinois before the robbery, was near the Glen Ellyn Bank at the time of the robbery and then traveled from Illinois to Wisconsin after the robbery. This exact type of expert opinion was found to be "problematic" when used in a similar manner in *United States v. Hill*, 818 F. 3d 289, 298 (7th Cir. 2016).

In *Hill*, the Seventh Circuit cautioned against the use historical cell phone analysis in this manner, noting "[o]ur concern is that the jury may overestimate the quality of the information provided by this analysis. We therefore caution the government not to present historical cell-site evidence without clearly indicating the level of precision – or imprecision—with which that particular evidence pinpoints a person's location at a given time. The admission of historical cell-site evidence that overpromises on the technician's precision—or fails—to account adequately for its potential flaws—may well be an abuse of discretion." *Id.* at 299.

Further, the CAST report oversimplifies the coverage area of cell phone towers. The depiction of coverage areas as v-shaped, or wedges is misleading and inaccurate. Radio waves emanating from cell phone towers do not act uniformly, or spread out evenly over geographical areas in tidy wedge-shaped patterns.

Jurors presented with this cell phone evidence entered through an expert will view this evidence as highly accurate and objective, despite the limitations discussed above. Any probative value the proposed expert testimony has will be substantially outweighed by the danger of prejudice that will result from jurors failing to appreciate the lack of validation, and

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<sup>9</sup> *Id.* at 361-362.



unknown reliability of the cell phone evidence. And, as noted by *Daubert*, because expert testimony can be “powerful, misleading, and difficult to evaluate,” the proposed testimony deserves greater weight when evaluating any potential prejudice under Rule 403. The prejudice to Mr. Crossley is too great to outweigh any probative value the testimony will have and must therefore be excluded.

WHEREFORE, Defendant, MARTIN CROSSLEY, requests that this Honorable Court to bar the proposed government testimony of Special Agent Jeremy Bauer, or in the alternative, to grant a hearing pursuant to *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579 (1993).

Respectfully Submitted,

/s Quinn A. Michaelis

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#### **CERTIFICATE OF SERVICE**

I hereby certify that on May 21, 2021 I electronically filed the above

#### **DEFENDANT’S MOTION IN LIMINE TO BAR EXPERT TESTIMONY**

with the Clerk of Court using the CM/ECF system to all listed parties in the case.

Respectfully Submitted on May 21, 2021.

By His Attorney,

s/ Quinn A. Michaelis

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